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BROOM CORN.

(*Andropogon sorghum vulgare.*)

Broom corn, as is well known, resembles sorghum in appearance, both plants being varieties of the same species. The culture of the two plants has much in common. Broom corn usually grows 8 to 12 feet high, though the dwarf variety attains only half that height. The chief economic difference between broom corn and other varieties of sorghum consists in the greater length, strength, and straightness of the fine stems composing the head, or panicle, and supporting the seeds. The longer, straighter, and tougher these stems or straws and the greener their color after curing, the higher the price the product commands. The variety, the character of the soil and season, and the thickness of planting influence these qualities.

VARIETIES.

The different varieties of broom corn afford dissimilar products. The dwarf variety produces the short brush used in the manufacture of small brooms and whisks. It is somewhat difficult to harvest and is cultivated only to a limited extent. Of the large varieties the Evergreen, known also as the Missouri or Tennessee Evergreen, has given general satisfaction. The Mohawk is regarded as earlier, but as affording a smaller yield. There is some advantage in planting more than one variety and at several different dates so as to extend through a long season the time of harvesting. At the Colorado Experiment Station the Evergreen proved the best of six varieties tested, and was much improved by the selection of seed through several years, the brush becoming longer, stronger, straighter, and brighter. In the field from which seed was selected the inferior heads were cut away before shedding their pollen, and thus kept from crossing with more valuable heads.

CLIMATE, SOIL, AND MANURING.

A climate suitable for Indian corn is also adapted to the growth of the broom corn plant. Dry weather at harvesting time is a favorable climatic condition. A well-drained, rich sandy or gravelly loam soil such as will produce a heavy yield of Indian corn, and is as free as possible from weeds, is best for broom corn. If the soil is not fertile it should be liberally manured. Fine, thoroughly rotted barnyard manure, and other nitrogenous fertilizers may be used with advantage, preferably along the rows or drills, in order to hasten the growth of the young plants which are usually small and delicate. Plaster 250 pounds per acre and wood ashes 12 to 15 bushels per acre have also been used on this crop with good results. In general it may be said that the system of manuring followed should be practically the same as that found adapted to corn in the same locality, and will depend largely upon the character of the soil.

PLANTING AND CULTIVATION.

The seed can be planted almost as early as corn. Only mature seed should be used, and it may be planted either in hills or drills, although drill culture is generally recommended. The rows should be 3 to 4 feet apart, and sufficient seed should be planted to insure 3 to 5 stalks every 15 or 18 inches in the row; or the seed may be drilled thinly so as to leave one stalk every 3 or 4 inches. An Illinois grower, however, gives 8 inches as the proper distance and 2 quarts as the requisite amount of seed per acre by this thin seeding. Sometimes 6 or 8 stalks are left in each hill, which are about 3 feet apart each way. The exact amount of seed to use depends largely upon the character of the soil and the quality of the seed.

The cultivation of broom corn is similar to that given to corn or sorghum. The early growth of the plant is slow, hence the need of prompt and frequent shallow cultivation to keep the weeds in subjection and to maintain a thin layer of loose soil on the surface.

In the culture of broom corn the value of rotation of crops is not thoroughly appreciated, and it is sometimes grown for many years in succession on the same land. If the stalks are plowed under and the seeds returned to the soil either in their green state or are fed to animals and the manure obtained applied to the soil, the draft on the soil is not very heavy. However, continuous culture, even of crops removing but small quantities of fertilizing ingredients, will eventually impoverish the soil, especially when, as is sometimes the case with broom corn, the stalks are burned on the land. Better crops will generally be secured when broom corn enters into the regular farm rotation, or when an occasional crop of clover, cowpeas, or other leguminous plant is grown on the land usually devoted to it.

HARVESTING AND CURING.

The chief difficulty encountered by the novice in broom corn culture is in determining when to harvest the brush. Even experienced growers are not unanimous on this point, some cutting the heads while in blossom, and others harvesting later so as to obtain better developed seeds possessing considerable nutritive value. The time generally preferred is just after the fall of the so-called "blossom" (anthers). When the saving of more mature seed is a consideration the head may be bent down by sharply bending the stalk at a point 12 to 18 inches below the base of the head. Thus the seeds while filling hang down and tend to keep the brush straight. This "lopping," if practical at all, is done after the head has attained its full length, but before the seeds acquire much weight. It is not practiced by large growers.

A common custom with tall varieties at time of harvesting is to bend down the stalks of two rows diagonally toward each other in such manner that the bent parts support each other in a nearly horizontal position. The stalks of one row cross diagonally those of the other and form a platform, or "table." The break, or rather the sharp bend, in the stalk is made about 2½ or 3 feet above the ground. The brush borne on one row projects over and beyond the other row in a position convenient for the cutter who follows immediately. The heads with 5 inches of stalk are laid on the table, or platform, until they can be removed to a drying shed. Cutting while the plants are wet with dew or rain should be avoided. The brush of the dwarf variety is pulled, not cut. If the season is dry as the corn approaches maturity the brush remains straight, but if the weather is hot and damp at this period the straws are likely to bend and to form crooked brush. In harvesting and in curing great pains are taken to keep the brush straight. Crooked or tangled brush is carefully sorted out.

From the field the brush is taken to the scrapers, which remove the seed. Large growers of broom corn employ special scraping machines, consisting of one or two cylinders provided with iron teeth and usually driven by horse power. The most complete scrapers are provided with an automatic feeding arrangement. With cheaper machines the operator holds the seed end of a handful of brush against the cylinders until the seeds are removed. It is stated that the ordinary thrashing machine, with concave removed, has been used in a similar manner. For small quantities of brush a long-toothed currycomb, or a wooden comb made by sawing teeth in a plank has been used.

The brush should be cured in the shade, as exposure to sun or moisture injures its color and strength. Free circulation of air is necessary in this process. Hence when large quantities are to be cured special curing houses thoroughly ventilated and provided with racks made of narrow planks and laths are constructed. On these racks layers of brush 3 inches thick are laid. Curing is continued until the brush will not heat when bulked, or baled.

When cured, the brush is pressed into bales, usually 46 by 30 by 24 inches and weighing about 300 pounds. The butts are placed evenly at the ends of the bale and the pieces of "brush" lap in the middle.

The labor of harvesting and curing makes it considerably more expensive to grow an acre of broom corn than a similar area of Indian corn. Greater skill is also required in handling the former crop.

FEEDING VALUE.

As regards feeding value the broom corn plant is inferior to Indian corn and to the nonsaccharine sorghums such as Kaffir corn, durra, millo maize, etc., being poorer in the valuable nutritive constituents (fat and protein) and richer in indigestible fiber. The chemical composition of the ripe seed, however, indicate that it is but slightly inferior to corn kernels as a food. The following table shows how broom corn compares with Indian corn in this respect:

Food constituents of broom corn and Indian corn.

	Water.	Water-free material.				
		Ash.	Protein.	Fiber.	Nitrogen-free extract.	Fat.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Broom corn plant	9.4	6.3	4.3	46.6	40.8	2.0
Corn plant	42.2	5.6	8.8	24.1	58.9	2.6
Broom corn seed	14.1	2.3	11.2	8.3	74.1	4.1
Corn kernels	10.9	1.7	11.7	2.4	78.1	6.1

Little use as a food is generally made of the broom corn fodder beyond letting the cattle run in the field after harvest. As the above table shows, the seed, when allowed to ripen, has considerable nutritive value, but since it is necessary in securing the best grade of brushes to harvest the heads green it has been found difficult to cure the seed obtained from them. Success in preserving the green seed in air-tight silos has been reported, so that by this process a cattle food of considerable value may be economically obtained. The yield of seed varies greatly, and on the average probably approximates to the quantity afforded by sorghum grown for sirup.

EXTENSION OF THE BROOM CORN INDUSTRY.

By reason of the wide range of the broom corn plant, its culture is capable of almost indefinite expansion should the demand for brooms justify its extension. The demand for brush, however, is limited and the price subject to wide fluctuations; hence there is much risk in planting large areas of broom corn in localities where it has never before been grown. Probably the safest course for those who would extend the industry into new territory is to establish a small broom factory, and at first grow only so much brush as can be profitably made up into brooms for the local market.

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Approved:
J. Sterling Morton,
Secretary.

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